



Conserve O Gram

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Monitoring Insect Pests With Sticky Traps

Effective insect pest management relies on the early detection of insect pests, hopefully before they become established and cause damage. Regular visual inspection of vulnerable and suspect areas is valuable despite obvious limitations. Due to the secretive nature of most museum pests and the difficulty of locating their hiding places, monitoring efforts should not rely solely on visual inspections. Trapping should also be used. Visual inspection, however, is an essential part of an Integrated Pest Management (IPM) strategy. Pest detection through trapping is just one part of an IPM program. For more information see *Museum Handbook*, Part I, Chapter 5, Biological Infestations.

Detection and monitoring with insect traps is an essential long-term adjunct to inspection, in the perennial battle against insect infestation of museum buildings and their contents. Insect traps are a continuous monitoring device. They catch a wide variety of pest species in their mobile stages of larvae and adult. Both crawling and flying insects can be caught. The data from the catches can be used to give information on the pest, an indication of their numbers and seasonal cycles and where they congregate. However, one thing insect traps cannot do is *control* infestations; they are purely a monitoring device when addressing museum insect pests.

Types of Insect Traps

The most common type of trap used in museums is the sticky trap. This is a cardboard construction, often triangular or wedge-shaped, in cross-section with the interior surfaces

coated with a non-toxic, non-drying sticky substance. There is usually no form of attractant, so insects walk onto the sticky surface and are caught. Larger versions are commonly sold as cockroach traps (Hoy-Hoy trap, Roach Motel etc.) sometimes incorporating a general food attractant that may encourage cockroaches but is unlikely to interest other insects.

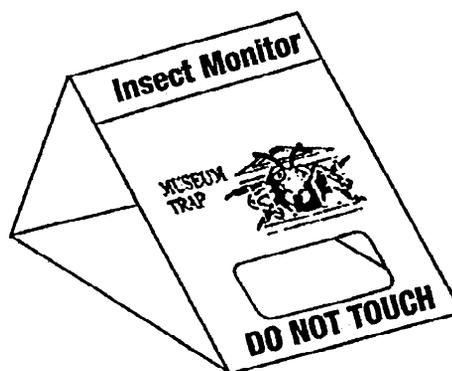


Figure 1. Example of one kind of sticky trap

There are a number of different versions of the sticky traps, such as hanging *tent traps* to catch flying insects, *window strips* to catch insects attracted towards daylight, *fly paper*, *sticky boards* etc., which may be useful in certain situations.

Other types of traps such as *funnel traps* and *UV electrocutor* types do not normally have a role in museum monitoring programs.

NOTE: Many building fittings and contents act as natural traps such as light covers, diffusers, vases and window sills, and should be inspected regularly for the presence of insects.

Special Attractants

Insects attract mates by having the female give out a *pheromone* sexual attractant into the air, which lures the male. A number of these pheromone lures have been synthesized for some insect pests, including:

- *Tineola bisselliella* – Webbing clothes moth
- *Stegobium paniceum* – Drug store beetle
- *Lasioderma serricornis* – Cigarette beetle
- *Anobium punctatum* – Furniture beetle

These pheromone lures, when combined with sticky traps, have a use in a museum pest monitoring program where the individual species of insect is suspected of being a potential pest hazard. They can be very effective in enclosed areas in attracting large numbers of gullible male insects from up to several meters away. They are valuable indicators of suspected specific insect pest problems, but are not a control measure, and therefore need to be used with discretion.

Setting Out the Traps

The traps need to be marked with the date and their location and set out in a grid pattern on the floors of a building, as most insects are located at ground level. Place the traps against the wall (insects tend not to cross open spaces) of a room, and on window sills to catch adult insects attracted to light.

Make a plan of the room and the position of the traps marked on it. Traps should be placed as follows:

- On wall/floor junctions at intervals of 5m to 10m depending on the size of room
- In corners, and near to doors, vents, fireplaces and other potential entry points for insects
- In dark, hidden areas that are not easy to survey

- On window sills
- In showcases (where permissible) and storage cupboards containing vulnerable material (including display fabrics, etc., that may be attacked)

Recording the Catch

The traps need to be inspected on a regular basis and the catch recorded. Details should be noted of:

- The species of insect and whether larvae or adult
- The numbers of the different species
- If relevant, the direction from which they entered the trap (which might indicate the source of the infestation)

Initially, traps should be monitored weekly, especially in the warmer summer months when there is more insect activity. In areas of low insect activity, inspections can be extended to every two months. Traps that are squashed or have the sticky surface covered in insects, dirt or fluff should be replaced. All the traps should be replaced regularly as the dead insects may become a food source for other insects and the glue dries out over time. The catch details should be noted regularly to show how numbers of insects are increasing in various locations over time. This can be recorded visually using transparent overlays on the plan or by using a simple paper or computer database.

Interpreting the Catch

The catch details recorded over space and time can give a variety of invaluable information:

- Identification of the species will indicate whether the insect is a pest and a potential hazard, or a harmless intruder. However, the presence of intruders indicates a poorly sealed building. A poorly sealed building allows more dirt and dust access, requires

more frequent cleaning and is harder to control environmentally.

- The number of species caught over time will indicate whether an infestation has become established or is just an isolated minor outbreak.
- The stage of development i.e., larvae or adult can give information on the infestation. Larvae indicate an active local infestation because of their limited mobility, whereas adult insects may be new, incoming insects.
- A concentration of insects on one area of trapping and insects entering the trap from a preferred side may show where the infestation is focused. For example, this information could help locate birds' nests in a blocked air vent.
- Trapping before and after the treatment can assess the success or failure of a pest control treatment.

Insect monitoring provides a long-term assessment on insect pests in collections. Monitoring should continue after any action to stop infestation has been carried out.

Action Check List

1. Draw a plan of the storage area marking doors, windows, chimneys, etc., and the position of storage fixtures.
2. Place the assembled traps on the floor at the edges of the room in a grid pattern. Make sure the traps have the start date and location on them, and transfer the information onto the plan.
3. Check the traps regularly. Initially daily or weekly and then as often as is necessary to note any significant changes. Note the details of the catch, including information on date/location,

numbers, species, and life stage of the insects caught etc.

4. Reposition the location and number of traps in response to the catch – some rooms may need only one or two as an occasional monitor.
5. Record all trap information for accurate interpretation of the results.

For more information on Pest Management see *Conserve O Gram 3/6 An Insect Pest Control Procedure: The Freezing Process*; *Conserve O Gram 3/8 Controlling Insect Pests: Alternatives to Pesticides*; and *NPS Museum Handbook Part I, Chapter 5, Biological Infestations*.

Sources

Sticky traps with and without pheromone lures are available from:

Gaylord Bros.
P.O. Box 4901
Syracuse, NY 13221-4901
(800) 634-6307

Insects Limited
(800) 992-1991
<http://www.insectslimited.com>

University Products
517 Main St, P.O. Box 101
Holyoke, MA 01041
(800) 628-1912

Parks can also obtain sticky traps through NPS *Tools of the Trade* sources.

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